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EXAMINER

ZIMMERMAN, JOHN J

ART UNIT

PAPER NUMBER

1775

DATE MAILED: 11/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/441,627

Applicant(s)

WILLIAMS ET AL.

Examiner

John J. Zimmerman

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,7-10,13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,11 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 26 August 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## OFFICE ACTION

### *Amendments*

1. This Office Action is in response to the Amendment received August 26, 2002.

### *Restriction Requirement*

2. Applicant's election of Group I, Species 2 (claims 6 and 11), in the Response received December 13, 2001 was noted in the previous Office Action. In view of the election, generic claims 1-3 and 12 (claims drawn to no specific compositions) and species claims 6 and 11 (drawn specifically to ceramics) have been examined in this prosecution. Claims 4-5, 7-10 and 13-14 have been withdrawn from consideration at this time as being drawn to non-elected inventions. At this time the generic claims have not been held to be allowable (see the rejections, below) and the restriction was made Final in the previous Office Action.

### *Drawings*

3. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on August 26, 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1, 2, 3, 6, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The claim limitation that the skin must have "substantially uniform interconnected porosity" is indefinite since the applicant's disclosure does not adequately define the scope of "substantially" with respect to this limitation. It is unclear how uniform the interconnected porosity of the skin must be in order to meet this limitation. There is no guidance in the original disclosure for determining what uniformity meets this limitation.

***Claim Rejections - 35 USC § 102/103***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomita (U.S. Patent 4,540,535).

10. Tomita discloses a formed in situ continuous skin bonded directly to a ceramic foam substrate (e.g. see Figures 3 and 4; column 2, lines 43-50). The ceramic skin appears to penetrate the ceramic foam at a depth of less than about 5 pore diameters. The ceramic skin appears to penetrate the ceramic foam at a depth of less than about 2 pore diameters. The cell density includes 20 cell/in. (e.g. see claim 3 of Tomita). Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity. In view of the type of process used by Tomita (e.g. see column 2, lines 3-50), there is no reason for one of ordinary skill in the art to believe non-uniformity would result. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

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11. Claims 1, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada (Japanese publication 61-268850) or by Japanese publication 63-2873.

12. Okada discloses a formed in situ continuous skin bonded directly to a ceramic foam substrate (e.g. see Figures 1-5). Japanese publication 63-2873 discloses a formed in situ (plasma sprayed) continuous skin bonded directly to a ceramic foam substrate (e.g. see Figures 1a and 1b). The ceramic skins of the references appear to penetrate the ceramic foam at a depth of less than about 5 pore diameters. The ceramic skins of the references appear to penetrate the ceramic foam at a depth of less than about 2 pore diameters. Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the references give no indication of any process steps that would cause nonuniform interconnected porosity. In view of the type of process used by the references and the figures of the references, there is no reason for one of ordinary skill in the art to believe non-uniformity would result. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

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13. Claims 1, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kallisch (DE 3905080 C1).

14. Kallisch discloses a formed in situ continuous skin bonded directly to a ceramic foam substrate (e.g. see Figures 1). The ceramic skin appears to penetrate the ceramic foam at a depth of less than about 5 pore diameters. The ceramic skin appears to penetrate the ceramic foam at a depth of less than about 2 pore diameters. Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity. In view of the type of process used by Kallisch and the figures of Kallisch, there is no reason for one of ordinary skill in the art to believe non-uniformity would result. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

15. Claims 1, 6 and 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Brockmeyer (U.S. Patent 4,331,621).

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16. Brockmeyer discloses forming a ceramic coating on a ceramic foam filter (e.g. see column 4, lines 6-16). In view of the similarity in the articles, materials and process disclosed by applicant to produce the claimed invention, it is likely that the article of Brockmeyer anticipates the claims. Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity. In view of the slurry process used by Brockmeyer, there is no reason for one of ordinary skill in the art to believe non-uniformity would result. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977). In the event that the claims are not anticipated by the reference, it also would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the viscosity and/or particle size of the coating materials of the reference so as not to penetrate too deeply into the foam filter because it would be understood by one of ordinary skill in the art that penetrating too far into the ceramic foam filter would impair the ceramic foam filter's ability to function as a filter.

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17. Claims 1-3, 6 and 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Morris (U.S. Patent 4,568,595).

18. Morris discloses spraying a ceramic coating on a ceramic foam filter (e.g. see claim 2 of Morris) with a pore size of 10, 20 and 30 ppi (e.g. see column 3, lines 29-37). Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity. In view of the similarity in the articles, materials and process disclosed by applicant to produce the claimed invention, it is likely that the article of Morris anticipates the claims. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977). In the event that the claims are not anticipated by the reference, it also would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the viscosity and/or particle size of the coating materials of the reference so as not to penetrate too deeply into the foam filter because it would be understood by one of ordinary skill in the art that penetrating too far into the ceramic foam filter would impair the ceramic foam filter's ability to function as a filter.

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19. Claims 1, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Shogo (Japanese publication 61-042468).

20. Shogo discloses a formed in situ continuous skin bonded directly to a ceramic foam substrate (e.g. see Figure 4). Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity. The ceramic skin of the reference is thermally sprayed onto the ceramic foam substrate and this process is the same process used by applicant. In view of the similar materials and methods of manufacture, it is likely that the article of the reference anticipates the claims. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

21. Claims 1, 2, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hagle (U.S. Patent 5,236,151).

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22. Hagle discloses a formed in situ continuous skin bonded directly to a ceramic foam substrate (e.g. see column 4, lines 8-29). The void spacing is 10-40 per inch (e.g. see column 3, lines 36-43). Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity. The ceramic skin of the reference is thermally sprayed onto the ceramic foam substrate and this process is the same process used by applicant. In view of the similar materials and methods of manufacture, it is likely that the article of the reference anticipates the claims. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

23. Claims 1, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Sherman (Refractory Metal Foams: "A Novel, New High-Temperature Structure", Ceramic Bulletin, Vol. 70, No. 6, 1991, pages 17-20).

24. Sherman discloses a formed in situ continuous skin bonded directly to a ceramic foam substrate (e.g. see figure on lower left side of first page). The ceramic skin appears to penetrate

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the ceramic foam at a depth of less than about 5 pore diameters. The ceramic skin appears to penetrate the ceramic foam at a depth of less than about 2 pore diameters. Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity.

Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

25. Claims 1, 3, 6 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Mano (U.S. Patent 6,057,030).

26. Mano discloses a formed in situ continuous skin bonded directly to a ceramic foam substrate (e.g. see Figure 7). The ceramic skin appears to penetrate the ceramic foam at a depth of less than about 5 pore diameters. The ceramic skin appears to penetrate the ceramic foam at a depth of less than about 5 pore diameters. Mano also discloses that plasma flame processes can be used to deposit the coating although not the preferred embodiment (e.g. see column 9, lines 53-57). All the disclosures in a reference must be evaluated for what they fairly teach one of

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ordinary skill in the art even though the art teachings relied upon are phrased in terms of a non-preferred embodiment or even as being unsatisfactory for the intended purpose, *In re Boe*, 148 USPQ 507 (CCPA 1966); *In re Smith*, 65 USPQ 167 (CCPA 1945); *In re Nehrenberg*, 126 USPQ 383 (CCPA 1960); *In re Watanabe*, 137 USPQ 350 (CCPA 1963). Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

27. Claims 1, 6 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Upadhyia (U.S. Patent 6,106,903).

28. Upadhyia discloses a formed in situ molybdenum disilicide continuous skin bonded directly to a ceramic foam substrate (e.g. see column 7, lines 4-20). Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the reference gives no indication of any process steps that would cause nonuniform interconnected porosity.

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The ceramic skin of the Upadhyia is thermally sprayed onto the ceramic foam substrates and this process is the same process used by applicant. In view of the similar materials and methods of manufacture, it is likely that the article of the reference anticipates the claims. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

29. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kallisch (DE 3905080 C1), Brockmeyer (U.S. Patent 4,331,621) or Morris (U.S. Patent 4,568,595) as applied to claim 1 above, and further in view of Narumiya (U.S. Patent 4,560,478).

30. Kallisch, Brockmeyer and Morris are molten metal filters described in the rejections, above. These references may differ from claim 11 in that they may not require the inclusion of molybdenum disilicide in the skin of the molten metal filter. However, Narumiya clearly shows that inclusion of molybdenum disilicide (e.g. column 4, line 17) in the manufacture of molten metal filters (e.g. see column 1, lines 5-7) improves the thermal conductivity and radiation power so that a uniform temperature distribution is achieved resulting in improved thermal shock resistance and heat resistance (e.g. column 2, lines 1-9). In view of Narumiya, it would have

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been obvious to one of ordinary skill in the art at the time the invention was made to include molybdenum silicide in the molten metal filters of Kallisch, Brockmeyer and Morris because it would likely improve the thermal shock resistance and heat resistance of their molten metal filters.

### ***Response to Arguments***

31. Applicant's arguments filed August 26, 2002 have been fully considered but they are not persuasive. Regarding the claim limitation that the skin must have "substantially uniform interconnected porosity", the applied references give no indication of any process steps that would cause nonuniform interconnected porosity and there is no reason for one of ordinary skill in the art to believe that any substantial nonuniformity exists in the skins of the applied references. Applicant fails to elaborate on applicant's rationale that the skin layers of the applied references do not have "substantially" uniform interconnected porosity within the scope of applicant's invention. In view of the similar materials and methods of manufacture disclosed by the applied art, it is likely that the products of the applied references anticipate this limitation in the claims. Particularly since many of the references use exactly the same types of methods that applicant discloses in applicant's specification to produce products which meet this limitation. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and

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Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977).

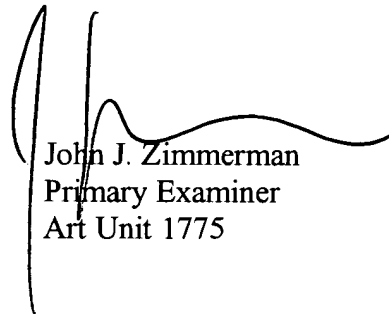
### ***Conclusion***

32. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (703) 308-2512. The examiner can normally be reached on 8:30am-5:00pm, M-F. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

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John J. Zimmerman  
Primary Examiner  
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November 14, 2002